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MONTGOMERY WATSON

May 30, 1996

United States Environmental Protection Agency
Region V (HSRL-6J)
77 West Jackson Blvd.
Chicago, IL 60604-3590

Project No.: 4077.0102

ATTN: Ms. Sheri Bianchin

SUBJECT: Air Permitting Requirements for the PGCS
American Chemical Service, Inc. Superfund Site
Griffith, Indiana

Dear Ms. Bianchin:

Based on our conversations with Ed Stresino of the IDEM Office of Air Management, we do not need to file a permit application or emission source registration for the air discharge from the treatment system associated with the Perimeter Groundwater Containment System currently being installed at the ACS Site. Rule 326 IAC 2-2-1(b)(3)(A) states that a permit or registration for a new source is only required if the VOC emissions exceed 3 pounds/hour or 15 pounds/day. Based on our estimates, the emissions will be well below this level. A copy of the calculations is included in the attached letter which was previously sent to your attention.

If you have any questions concerning this issue, please don't hesitate to contact me at (801)273-2481.

Sincerely,

MONTGOMERY WATSON

RJSchlicher

Ron J. Schlicher
Engineering Manager

Enclosure

cc: Holly Grejda/IDEM
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MONTGOMERY WATSON

December 5, 1995

United States Environmental Protection Agency
Region V (HSRL-6J)
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Project No.: 4077.0102

Attention: Ms. Sheri Bianchin

Subject: Air Permitting Requirements for Groundwater Treatment System
American Chemical Services, Inc. Superfund Site
Griffith, Indiana

Dear Ms. Bianchin:

Montgomery Watson is designing and planning to implement a perimeter groundwater containment system (PGCS) at the American Chemical Services, Inc. (ACS) Site. The PGCS will include a groundwater extraction system in the upper aquifer along the western and northern boundaries of the site, a groundwater treatment system, and a treated effluent discharge system. Air emissions will be generated from the groundwater treatment system. Pursuant to CERCLA authorization, and as stated in the Unilateral Administrative Order (UAO) for the ACS Site dated September 30, 1994, permits are not required for any on-site activities. The treatment system, however, will meet the substantive requirements typically included in an air permit. This letter describes the foul air collection and discharge system proposed for the treatment facility, presents air emissions estimates for the groundwater treatment system, and provides our recommendations regarding the air treatment system.

The groundwater treatment system for the PGCS consists of a phase separator for removal of oil and free product from the extracted groundwater, equalization tanks, UV oxidation systems for treatment of organic constituents, a chemical precipitation unit for metals removal, a sand filter for suspended solids removal, and activated carbon vessels for final polishing of treated groundwater, as needed. Ancillary process units include storage tanks for oil and free product recovered from extracted groundwater, sludge storage/thickening tanks, a filter press for sludge dewatering, a pH adjustment tank to meet the effluent discharge standards, a sump to collect process-derived wastewater, and effluent sampling and flow measuring systems. Figure 1 presents the process flow diagram for the groundwater treatment system.

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Potentially contaminated air emissions will be generated at the groundwater treatment system from the venting of the phase separator; oil and free-product storage tanks; sludge storage/thickening tanks; equalization tanks; and filtrate, decant water, backwash sump. Since the volatile organics in the extracted groundwater will be destroyed in the UV oxidation system, any downstream treatment units such as those for metals removal, sand filtration, pH adjustment and activated carbon vessels will not generate air emissions that may impact the local air quality.

The treatment units that have a potential to generate contaminated air emissions will be covered and connected to an air collection system. The collection system consists of stainless steel lines individually connected to each treatment unit which has a potential to generate contaminated air. Each individual air collection line is equipped with a ball valve to facilitate equipment isolation during regular maintenance and servicing, and a check valve to prevent backflow of air into a treatment unit. The individual air collection lines will be connected to a main header that will convey foul air from individual treatment units to the discharge stack.

Air emissions calculations were performed on the groundwater treatment facility to estimate mass loading of contaminants to the atmosphere via air emissions. The following assumptions were used during the estimation process:

- The groundwater treatment system at the ACS Site is a passive vent system since the treatment system does not include an air blower.

- Air emissions will be generated from treatment units as a result of air displacement and volatilization at the liquid-air interface. Air displacement occurs due to fluctuations in the available volume occupied by extracted groundwater. Volatilization can be attributed to vapor pressure and other chemical characteristics of the constituent.

- The volume of air displaced in a treatment unit will be minimized once the groundwater treatment system starts operating at a constant flow. Volatilization at the liquid-air interface is assumed to remain constant throughout the system operation.

- The main constituents of concern are benzene, toluene, ethylbenzene and xylenes (BTEX), and volatile chlorinated solvents.

Based on the above assumptions, the following steps were taken to estimate air emissions from a treatment unit:

- Calculate the air volume available in a treatment unit that can be displaced during the treatment system operation. This was based on an assumed rate of liquid flow into and out of the treatment unit and on the fluctuations in the water level within the treatment unit.

- Calculate the rate at which air will be displaced from a treatment unit. This is dependent on the rate of liquid flow into and out of the treatment unit. It should be noted that under normal operating conditions, oil and the free product buildup in the phase separator will overflow into the oil and free-product storage tank; the liquid level in the phase separator will remain constant. Therefore, no air flow is expected from the phase separator. However, we have assumed an air flow of 0.07 cubic feet per minute (cfm) to provide some conservatism in our assumptions.

- Based on the influent concentration and removal efficiency of the treatment units, estimate the liquid-phase concentration of contaminants in each treatment unit.

- For the phase separator and the oil/free-product storage tank, convert mole fractions of contaminants in the liquid phase to equivalent mole fractions in vapor phase using Raoult's Law.

- For other treatment units generating contaminated air emissions, convert the liquid-phase concentration of contaminants to equivalent vapor phase concentration using standard partition coefficients (Henry's constant and vapor pressure at the design temperature).

- Sum up the air flow and mass of vapor-phase contaminants from each treatment unit to estimate the total air flow and mass concentration of contaminated air emissions from the groundwater treatment system.

The table below summarizes the air emissions calculations for different treatment units at the groundwater treatment system.

Treatment Unit	Average Air Flow (cfm)	Vapor Conc. (lb/ft^3)	Mass Loading (lb/min)	Mass Loading (lb/day)
Phase Separator	0.07	0.0158	1.1×10^{-3}	1.58
Equalization Tank	3.0	3×10^{-5}	9×10^{-5}	0.13
Oil and Free-Product Storage Tank	0.07	0.0158	1.1×10^{-3}	1.58
Sludge Storage/Thickening Tank	0.14	3×10^{-5}	4×10^{-6}	5.8×10^{-2}
Process Sump	0.56	3×10^{-5}	1.7×10^{-5}	2.45×10^{-2}

The results of the above calculations demonstrate that the average potential air flow from the groundwater treatment system is approximately 4 cfm. This average flow will produce a total mass loading of 0.023 pounds per minute of volatile constituents to the atmosphere which equates to 0.14 pounds per hour or 3.4 pounds per day. This mass loading is well below the local discharge limits set by the Indiana Department of Environmental Management (IDEM). The mass loading of volatile constituents from the groundwater treatment system is also well below the guideline limits that necessitate the use of air pollution control technologies.

The extracted groundwater quality will be further monitored during the treatment system startup and prove-out phase. To assure compliance with the air discharge requirements, however, Montgomery Watson is proposing to install a temporary air pollution control system to treat air collected from the groundwater treatment system during the startup and the prove-out phase. The air treatment system will consist of a 55-gallon canister filled with activated carbon. The carbon canister will be a vendor-supplied unit with no instrumentation or controls except a manual valve operation. The main header from the air collection line will be connected to the carbon canister. Air emissions generated from the treatment units will be passed through the carbon canister before discharging to the atmosphere.

Carbon adsorption is considered a Best Available Control Technology (BACT) for treatment of hydrocarbon and chlorinated solvent vapors. Effluent from the carbon canister is anticipated to meet all state and local guidelines and discharge limits. During the system start-up and prove-out phase, influent and effluent air samples will be collected to evaluate the long-term need for an air emissions control process, and to monitor the performance of the activated carbon system. Montgomery Watson will provide further recommendations regarding air treatment at a later date.

In summary, air emissions from the groundwater treatment system are expected to be well below the local and state emissions guidelines. Pursuant to CERCLA authorization and UAO requirements, no permits are required for any on-site activities. However, the treatment facility will need to meet the substantive requirements typically included in an air permit. A temporary air pollution control system will be provided at the groundwater treatment system to assure compliance with discharge limits during the startup and prove-out phase.

Montgomery Watson does not plan to file an air permit application for the ACS Site. We trust that this letter provides sufficient information to allow you to address the air permitting issues and our recommendations at this time. However, should you require

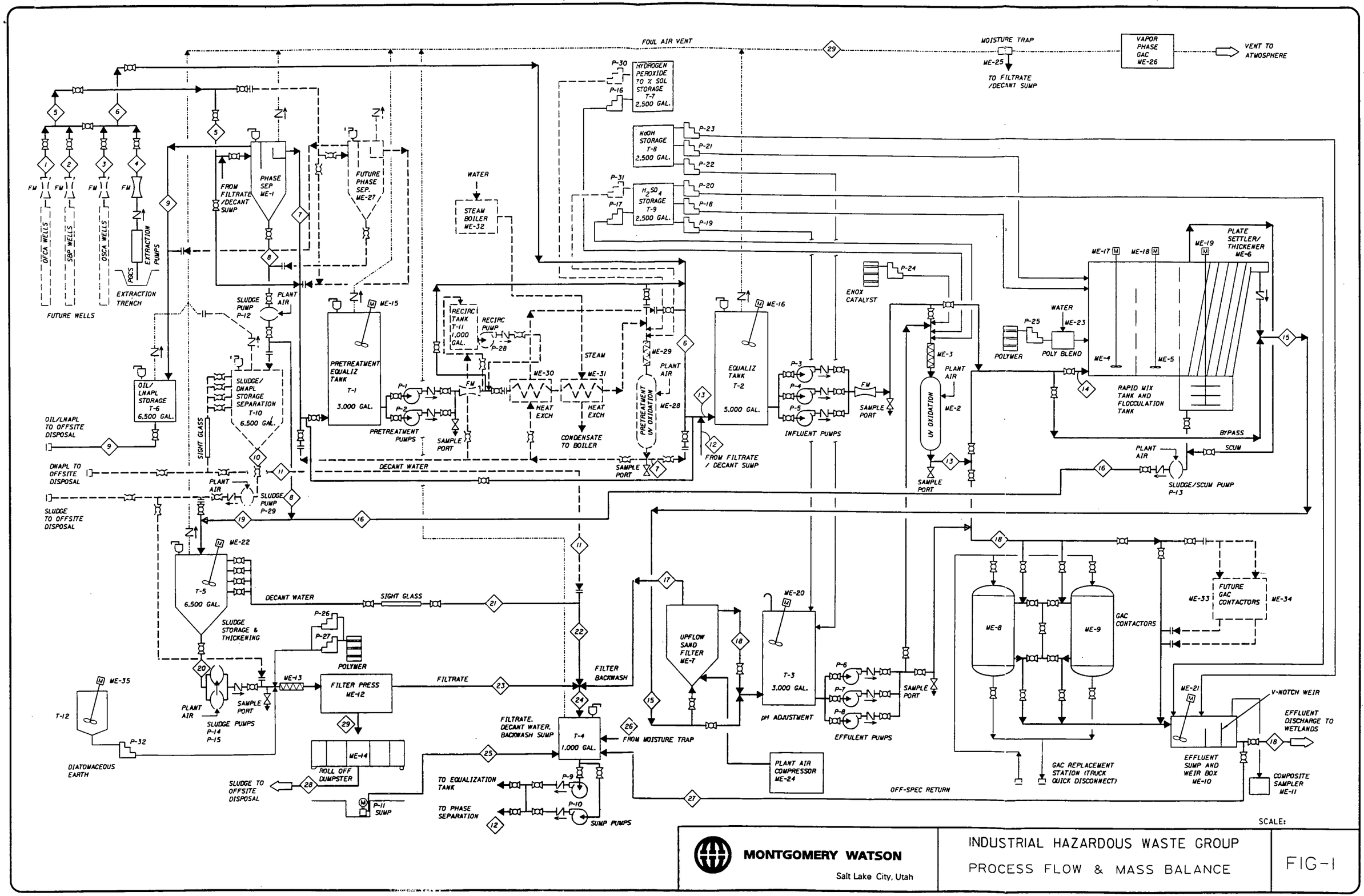
additional information or clarification, please do not hesitate to contact Ron Schlicher at (801) 272-2281 or me at (303) 938-8818. Your prompt attention to this matter will allow us to expedite the design and installation of the groundwater treatment system.

Sincerely,

MONTGOMERY WATSON AMERICAS, INC.

for
Joseph D. Adams, Jr., P.E.
Vice President

cc: Holly Gredja – IDEM
Felicia George – IDEM



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